

# Psychosocial Effects of Radiation Exposure

## Professional Personnel

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### Fact Sheet #15

Environmental Health Programs  
Office of Radiation Protection



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## INTRODUCTION

Fear of radiation is common, partly due to the general public's lack of understanding of radiation, highly publicized accidents, and the nature of radiation itself. It is tasteless, odorless and colorless, not making it possible to detect without proper instrumentation. Many experts feel that the psychological effects of radiation exposure are as serious as the actual physical health effects.

At the International Conference on Radiation and Health, "there was broad consensus that long term psychosocial effects may turn out to be the most significant source of health problems from psychological distress. The public's response to radiation is one of anxiety, fear, and concerns about the lack of control over modern technology. (1)

In the book "Effects of Ionizing Radiation", Evelyn Bromet concludes "From a public health perspective, the psychological effects of nuclear catastrophes may be equally, if not more, prevalent than their physical health consequences. (2)

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## SPECIFIC EXAMPLES

In April 1986, an accident occurred at the Chernobyl Nuclear plant in the Ukraine, sending radioactivity around the world. In Washington State, assurances were made to the public that, though measurable, radiation levels were not high enough in the state to require any protective actions. No health effects were expected. Despite this being well publicized, the Office of Radiation Protection was inundated with calls, requiring as many as 30 radiological health physicists to respond to public inquiries, concerns and fears. Fear caused people to avoid drinking milk or eating fresh vegetables, in spite of assurances that this was not necessary. (3)

In 1986, the U.S. Department of energy revealed that hundreds of thousands of curies of iodine-131 were released in Hanford's past. This generated such concern that in 1990, when DOE planned on a small research activity involving the potential release of low quantities of iodine-131, so low it would not have been possible to measure it offsite. Public fear and concern were so significant that the DOE had to cancel the project.

A study conducted in Belarus six years after the Chernobyl accident "found a high prevalence of psychological distress and psychiatric disorders" in the Belarus region of Gomel. This area had been significantly contaminated during the disaster.

Following the Goiania, Brazil incident involving a broken Cs-137 source that was destroyed in 1987, fear caused 112,000 people to seek medical attention. The fear was reported to be so intense that people fainted in line waiting for an examination.

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## **TERRORIST ATTACKS**

The fear of radiation combined with an act of terrorism adds significantly to the potential psychological effects on the public. The very nature of a terrorist attack is to spread terror. Terror caused by such an attack could create chronic distress for years, a loss of trust, and a heightened sense of vulnerability.

A significant problem with radiation exposure, real or perceived is that it is colorless, odorless and tasteless, not making it possible to detect without proper instrumentation. Fear of the unknown, along with the extremely difficult task of surveying every square inch of a potentially contaminated area would add to the level of fear and anxiety associated with a terrorist attack.

Effects can be physical, as well as emotional, including fatigue, insomnia, and impaired concentration. These effects can be as debilitating as physical injuries, and should be taken seriously. No one's fear and anxiety over radiation exposure, real or perceived, should be taken lightly.

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## **VULNERABLE GROUPS**

The following groups can be especially vulnerable to psychosocial effects from a terrorist attack involving radioactive materials:

- ◆ Children
- ◆ Emergency Responders/Workers
- ◆ Pregnant Women and Mothers
- ◆ Clean-up Workers
- ◆ Elderly

Hospitals and other medical facilities should include such preparations in their emergency plans. Training should also be provided to ensure that medical staffs are trained to treat potentially contaminated patients to minimize the stress and maintain the effectiveness of those workers. Training should also be provided to ensure that medical staffs are counseling those sufferings from the psychosocial effects of the attack. More detailed recommendations can be found in the NCRP Report No. 138, available from the National Council on Radiation Protection and Measurement, 7910 Woodmont Avenue, Bethesda Maryland, 20814-3095.

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## Sources

- (1) Cwikel, Julie, Comments on the Psychosocial Aspects of the International Conference on Radiation and Health, Environmental Health Perspective 105 Suppl 6) 1607-1608 (1997).
- (2) Bromet, Evelyn J., Psychological Effects of Radiation Catastrophes, (Chapter 18, page 283, Effects of Ionizing Radiation, National Academy Press (1998).
- (3) Picket, Bruce, DSHS Activities Relating to the Chernobyl Nuclear Accident, June 1987, Office of Radiation Protection, Department of Social and Health Services, Olympia, WA.
- (4) Havenaar, J.M., et. Al. (1996), Long-Term Mental Health Effects of the Chernobyl Disaster: an epidemiologic survey in two former Soviet regions. A. J. Psychiatry 154: 1605-1607.

*Links to external resources are provided as a public service and do not imply endorsement by the Washington State Department of Health.*